In Re: AT&T Petition For	§	
Declaratory Ruling That	§	
AT&T's Phone-To-Phone IP	§	WC Docket No. 02-361
Telephony Services Are	§	
Exempt From Access Charges	§	

DECLARATION OF CHAD FRAZIER

1. My name is Chad Frazier. I am currently employed by Transcom Enhanced Services, LLC ("Transcom") as President. Prior to that time I was the Chief Technical Officer for DataVoN, Inc. ("DataVoN"). My responsibilities at DataVoN included overseeing the deployment and operations of DataVoN's equipment and leased network facilities and services.

2. DataVoN was an Enhanced Service Provider that provided call processing and arranged for call termination services to its customers, which primarily consisted of telecommunications carriers. In sum, DataVoN provided VoIP ("IP Telephony") services to its customers. Transcom purchased many of DataVoN's assets as part of DataVoN's bankruptcy.

3. While I was still at DataVoN, Verizon filed an unliquidated and unsecured claim in the DataVoN bankruptcy case In re: Chapter 11 DATAVON, INC., et al, Case Number 02-38600-SAF-11 (U.S. Bankruptcy Court, N.D. Texas, Dallas Division). DataVoN agreed to produce certain information and to allow depositions. On May 14, 2003, I was deposed by Verizon pursuant to the parties' agreement. Verizon subsequently used some of the information it obtained in discovery as part of an *ex parte* filing before the FCC in the AT&T Declaratory Ruling Request proceeding. It is noteworthy that although Verizon makes a large number of claims in its FCC filing alleging wrong doing by several entities, including DataVoN, Verizon essentially disappeared from the DataVoN bankruptcy case and never pursued any of its claims, after the discovery was completed. This is so even through there were significant funds available to pay unsecured claims in the DataVoN case.

4. My deposition, including the errata to the deposition, are attached to this declaration. I believe that the FCC should very carefully review these materials, since they provide a complete rebuttal to many of the claims Verizon made in its *ex parte* filing. The simple reason for this is that DataVoN was an enhanced service provider, and was therefore treated as an end user and not a carrier. DataVoN's services were enhanced and/or information services and therefore exempt from access charges.

5. The deposition makes it clear that DataVoN did not provide telecommunications and therefore did not provide telecommunications service. DataVoN's services do not meet the definition of "telecommunications" because DataVoN did not act as a mere conduit of information of the calling and/or called parties' choosing. There was a change in form and a change in content.

6. The deposition also makes it clear that DataVoN provided enhanced services as defined by FCC rules. DataVoN purchased or leased common carrier transmission services, and then

"employ(ed) computer processing applications that act on the format, content, code, protocol or similar aspects of the subscriber's transmitted information; provide the subscriber additional, different, or restructured information; or involve subscriber interaction with stored information."

7.   The deposition makes it clear that DataVoN provided information services. DataVoN offered a "capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications."

8.   Many commentors in this case have made the broad assertion that IP Telephony does not result in any change in content or net change in form. If pressed, they assert that any change in content is "imperceptible to the user" and is somehow therefore not a change in content. While I am not a lawyer, the applicable definitions do not appear to require any "net" change in form, nor do they appear to require that any change in content be "perceptible." In much the same way that an e-mail recipient cannot usually perceive a change in form or content and may even assume there is no change, an IP Telephony participant simply may not know or understand, and probably will not care. In any event, as is made clear from the deposition, there is a change in content that _is_ perceptible to the participant, if the participant is discerning. Any person that were to compare the information as sent and received would certainly notice the change.

9.   There are at least four reasons why DataVoN's service was an enhanced service and was not telecommunications. First, the suppression and compression used to enhance the efficiency of a VoIP system makes the service enhanced. *Computer II* included "bandwidth compression techniques" among the list of techniques that did not constitute an enhanced service,[1] but there is a difference between the bandwidth compression techniques employed in traditional voice networks and the more complex process currently used in VoIP. Suppression and compression techniques commonly used in VoIP include detecting whether a signal contains voice sound, and transmitting only those portions determined to be voice.[2] They delete silence and inject "white noise" and they delete all other "non-voice" sounds.[3] Neither of these functions occur on traditional domestic US voice systems: both silence and non-voice sounds are transmitted. Thus, VoIP processes actually interact with information created by the originator of a message, analyze its content, remove unnecessary (non-voice) portions, inject new content and pass the changed result on toward the message's ultimate destination.[4] This process therefore employs "computer processing applications that act on the ... content ... of the subscriber's transmitted information."[5] It also involves the deletion of information, which, under the *Communication Protocols* case, makes it an enhanced (and therefore also an information) service, and not telecommunications.[6]

10.   Second, as with all of IP, packetization and adding of protocols makes VoIP an enhanced service. As seen above, the FCC has generally held protocol processing to be an enhanced

[1]   *Amendment of Section 64.702 of the Commission's Rules and Regulations (Second Computer Inquiry)*, 44 RR 2d 669, 77 FCC 2d 384, (1980) ("*Computer II*").

[2]   Frazier Deposition p. 14, line 4 to p. 25, line 12.

[3]   Frazier Deposition p. 14, line 4 to p. 25, line 12; p. 92, lines 2 to 25.

[4]   Frazier Deposition p. 14, line 4 to p. 25, line 12.

[5]   See *Computer II* definition at 420.

[6]   *Communications Protocols under Section 64.702 of the Commission's Rules and Regulations*, 55 RR 2d 104, 95 FCC 2d 584 ("*Communications Protocols*") at 3 (1983).

service. Where data transmission systems were held to be basic services, such as in the *Frame Relay* case, the service was generally offered by a facilities-based common carrier that did not add or remove control information, but merely used it to route data across the network. In those cases, the customer, not the carrier, created protocol headers and trailers,[7] gave them to the service provider for transmission across its lines, and removed them at the end. In IP-based voice services, the VoIP service provider packetizes the data and adds protocol data, then releases it for transmission.[8] Thus, an VoIP service provider is involved in the addition, deletion, and processing of information in a manner not present in the *Frame Relay*[9] case.

11. Third, IP-based voice services store data. At the transmission end, content (data) is stored during the transmitter recording process, and again briefly during the encoding and compression processes.[10] At the receiving end, incoming content (data) is stored in a jitter buffer, to properly order the information and wait for late-arriving packets.[11] This data storage of the content is not caused by the congestion of the network or transmission priorities of the originator.[12]

12. Fourth, voice reconstruction to compensate for lost packets and transmission errors in a VoIP system makes it an enhanced service. While the definition of basic service in *Computer II* included "error control techniques," there are significant differences between the simple error control techniques used over the switched network and the more complex systems used by Internet voice systems to enhance the delivery of voice over the IP network. Conventional error correction techniques check incoming blocks of data for errors, and request the retransmission of those containing errors.[13] Thus, the message finally delivered to the end user is exactly the same as the message that originated, even if some errors result during the original attempt to transmit the data. The typical IP-based voice error detection and correction system differs in that it not only processes and transforms information, but uses the retrieval of stored data and the creation of new data that did not exist in the original to enhance the communication and fill in gaps caused by dropped packets or inadequate conversion or receipt of aural impulses at the originating microphone.[14] The sound heard by the receiver is not the same as the sound that was originally transmitted: portions of it have been created by the system to enhance the delivered

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[7] *Newton's Telecom Dictionary*, 324, 708 defines "headers" and "trailers":
Header 1. Protocol control information located at the beginning of a protocol data unit.
2. The portion of a message that contains information that will guide the message to the correct destination. This information contains such things and the sender's and receiver's addresses, precedence level, routing level, and synchronization pulses.
Trailer 1. [not applicable]
2. A block of controlling information transmitted at the end of a message to trace error impacts and missing blocks. Also referred to as a trace block.

[8] Frazier Deposition pp. 26 to 36; p. 53, line 24 to p. 54, line 7.

[9] *Independent Data Communications Manufacturers Association and AT&T Petition*, 1 CR 409, 10 FCC Rcd 13717 (1995) (*"Frame Relay"*).

[10] Frazier Deposition pp. 15 to 16; p. 67, line 1 to p. 69, line 3.

[11] Frazier Deposition pp. 15 to 16.

[12] Frazier Deposition pp. 15 to 16.

[13] Frazier Deposition p. 14, line 4 to p. 25, line 12.

[14] Frazier Deposition p. 65, line 3 to p. 66, line 16 (UDP does not request retransmission of dropped packets, which requires digital signal processors to "create" best estimate of the data that was lost.)

sound.[15]   In the words of the *Communications Protocols* decision, this is a "creation" of information.

13.   There were some questions that Verizon asked during the deposition that I could not completely answer.   Since then, I have had an opportunity to research in more detail the equipment in issue and can provide a more complete description of how it operates.

14.   Voice Activity Detection:
-VAD functionality enables bandwidth savings and enhances routing power with minimal effect on the voice quality.
- The algorithm detects silence periods and the voice periods.
- The detection of voice is based on two parameters: the energy of the signal (level) and its spectral characteristics.
- False detection of voice will increase bandwidth consumption and the PPS (packets per second) rate, and misdetection of voice will decrease the voice quality.

15.   Comfort Noise Generation:
- During silent periods, background noise resembling the original background signal should be regenerated in the receiving gateway ("Rx"). Thus in order to avoid listener discomfort, the resemblance is important since during the periods of voice activity the original background signal can be heard and the difference in volume or in spectral distribution between the original signal present at activity periods and the regenerated signal during silent periods may be annoying.
- To deal with this issue, a learning algorithm in the transmitting gateway ("Tx") characterizes the background noise volume and spectral distribution, and information is conveyed to the Rx using a packet called SID (Silence descriptor), then, a signal <u>resembling</u> the original background noise is generated by a Comfort Noise generator in the Rx.
- The learning algorithm in the Tx is able to measure the changes in the background noise in order to send a new SID whenever it is decided that the background noise has been changed considerably from the previous time in which a SID has been transmitted to the RX.

16.   This information responds to two of the specific questions asked by Verizon. First, Verizon inquired whether background noise at a party could be heard at the other end of a call.[16] The precise answer to this question is that the called party would hear background noise, but it would not be the same noise that entered the transmitting microphone, in that some of the volume would be "smoothed," some would be deleted, and some would in fact be generated by the system.

17.   Verizon also asked if a grandmother could hear a violin played at the other end by a granddaughter.[17]   The precise answer to this question is that the system would more than likely consider the violin to be "voice" and treat it as such.   Therefore, grandmother would hear a violin-like sound.   However, the sound would not be exactly like the violin sound that went in to the transmitting microphone.   Instead, she would perceive a sound more like that which would be

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[15]   Frazier Deposition p. 72, line 19 to p. 73, line 7; p. 84, lines 17-20; p. 85, lines 11-17; p. 88, line 4 to p. 90, line 1.

[16]   Frazier Deposition pp. 19-25.

[17]   Frazier Deposition p. 93-98.

emitted by a person's voice imitating a violin, on pitch. In other words, grandmother would not hear Paganini; she would instead hear Michael Winslow (who played "human beat box" Larvell Jones in the Police Academy movies) imitating Paganini.

18. The distinction between basic and enhanced services is whether the service provider offers a transparent communications path, or whether the provider uses computer processes to add value. VoIP systems add value by increasing efficiency and by providing a capability for integrating voice services with other forms of data and to redirect content (data) to other devises such as computers or pagers.[18] Accordingly, they are enhanced, or "value added," services.
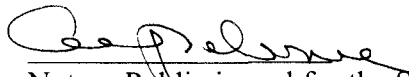
19. The deposition and the additional information provided in this Declaration make it clear that IP Telephony is not telecommunications, since there is in fact both a change in form and a change in content. The change in content is material and could be perceived by a discerning listener. Further, IP Telephony clearly involves "computer processing applications that act on the format, content, code, protocol or similar aspects of the subscriber's transmitted information; provide the subscriber additional, different, or restructured information; or involve subscriber interaction with stored information." This makes it an enhanced service. Finally, IP Telephony offers a "capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications" which means that it is an information service.

20. Since IP Telephony is not a telecommunications service, and DataVoN was not a carrier, DataVoN had no obligation to transmit any particular CPN or ANI. Only carriers are required to transmit CPN. Verizon has no reason to object that DataVoN's Charge Number was inserted into the SS7 data stream, since DataVoN is an end user, and one typically expects the end user's Charge Number to be included. I also note that Verizon's complaint about CPN is likely misplaced in any event. The FCC's rules do not indicate that CPN is used for billing; instead, the rules expressly state that charge number and ANI are used for billing. As far as the FCC rules go, CPN appears to be useful only for Caller ID purposes. Since DataVoN was the billed party (by its terminating CLEC vendors) it was appropriate for DataVoN's charge number and ANI to appear in the SS7 data stream.

FURTHER AFFIANT SAITH NOT

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Chad Frazier

SUBSCRIBED AND SWORN BEFORE ME, the undersigned notary public, on this the 10 day of Sept, 2003, to certify with witness my hand and official seal.

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Notary Public in and for the State of Texas
Carolyn J Malone
Printed Name of Notary
4/11/05
Commission Expiration

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[18]   Frazier Deposition p. 12, lines 20-25; p. 18, lines 1-6.

CAROLYN J. MALONE
Notary Public
State of Texas
Comm. Expires 4-11-2005